Line-Point Intercept Directions

Note: The HAF site-scale protocol for line-point intercept is the same as the BLM's core method. Directions for the method are given below, but readers can refer to Herrick et al. (2005) (or the most current version) for more detail.

Equipment:

Tape, 50 m	Stakes for tape (at least two spikes; old, medium to large screwdrivers work well)
Pin flag or pointer or other point intercept device: straight piece of wire or rod at least 1 m long and less than 2.5 mm in diameter	Meter stick (for measuring shrub and grass/forb heights)
Digital camera (5 megapixel minimum), extra camera battery	Photo cards and markers or small dry-erase board and marker
Topographic map and aerial photographs with project area, general cover types, and pasture boundaries delineated	GPS unit, compass
Forms and/or electronic data entry device with extra battery, pencils	Ecological Site Guides
Calculator	

Protocol:

1. Complete all metadata information at the top of the LPI field form for each transect, making sure that the plot identification information (i.e., plot number) matches that recorded on the overall plot metadata form. If more than 50 points are being recorded on a transect, attach additional forms as needed.

2. Pull out the tape and anchor each end with a steel pin. Keep measuring tape taught and straight. Keep measuring tape as close to the ground as possible (thread under shrubs using a steel pin as a needle), but not so close that it disturbs the soil surface or affects the natural way the vegetation stands below the tape (figures B-1 and B-2).

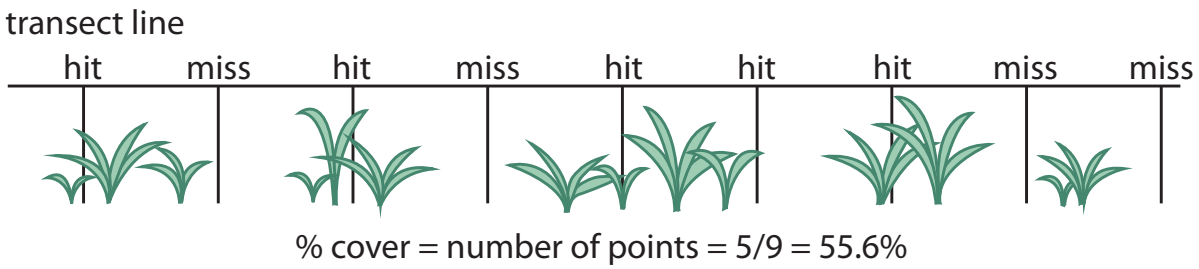

Figure B-1. The line-point intercept method can be used to measure foliar cover and vegetation height of all grass, forb, and shrub species at a site or foliar cover of a single life form (e.g., sagebrush cover for winter habitat areas).

Figure B-2. Measuring plant species using the line-point intercept technique (pin size exaggerated to emphasize method).

3. Begin at the "0" end of the tape.

4. Working from left to right, record cover at each 1 m mark (or ½ m and 1 m mark for 100 points per transect). Begin recording at the first ½ m or 1 m mark depending on the number of points desired. Always stand on the same side of the line. Drop a pin flag to the ground from a standard height next to the tape. Keep the pin vertical. Make a "controlled drop" of the pin from the same height each time. Position the pin so its lower end is several centimeters above the vegetation, release it and allow it to slip through the hand until it hits the ground. A low drop height minimizes "bounces" off of vegetation but increase the possibility for bias. Do not guide the pin all the way to the ground. It is more important for the pin to fall freely to the ground than to fall precisely on the mark.

5. A laser with a bubble level can be used instead of the pin. This tool is useful in savannas where plant layers may be above eye level.

6. Once the pin flag is flush with the ground, record every plant species it intercepts:

    a. Record the species of the uppermost or first stem, leaf, or plant base intercepted in the "Top Layer" column using the USDA PLANTS database species code (http://plants.usda.gov), a four- to six-letter code based on the first two letters of the genus and species, subspecies, or the common name. If no leaf, stem, or plant base is intercepted, record "NONE" in the "Top Layer" column. Woody sagebrush plants should be identified to the subspecies.
    b. Record all additional species intercepted by the pin in the order that they are intercepted from top to bottom.
    c. Record all foliage whether alive or dead, but denote dead vegetation by using the appropriate checkbox in an electronic data collection database or circling the species on the data form. If both alive and dead canopy for a species is hit on the same point, record the live canopy. Sagebrush indicators for sage-grouse habitat are calculated from only live canopy hits and do not include dead stems of shrubs. Residual plant cover can be very important for sage-grouse nesting, so it is also important to denote live versus standing dead herbaceous vegetation on the field form. See Connelly et al. (2003), Monitoring of Greater Sage-grouse Habitats and Populations; http://sagemap.wr.usgs.gov/docs/grouse_habitat_book.pdf; and http://www.cnr.uidaho.edu/range357/notes/cover.pdf) for discussions on cover.
    d. Record each plant species only once, the first time it is intercepted, even if it is intercepted several times.
    e. Record the following codes for lower layers: "L" for herbaceous litter, if present (litter is defined as detached stems, roots, and leaves); "WL" for detached woody litter > 5 mm (~1/4 in) in diameter; or "VL" for vagrant lichen.
    f. If a sagebrush plant is intercepted, record the shape of the sagebrush as "S" for spreading or "C" for columnar (figure 13).

7. Record a species code (if the pin flag intercepts a plant base) or another soil surface code in the "Soil Surface" column.

    a. Use the following abbreviations for soil surface type: G = gravel (≤5 mm diameter or ~1/4 in), R = rock (>5 mm diameter or ~1/4 in), BR = bedrock, EL = embedded litter, D = duff, M = moss, LC = visible lichen crust on soil, and S = soil, without any other soil surface code.
    b. Record plant species (or life form, if species is unknown) when present. For unidentified plants, use the following codes and a sequential number: AF# = annual forb, PF# = perennial forb, AG# = annual grass, PG# = perennial grass, SH# = shrub, and TR# = tree.
    c. An intercept with a plant base is defined as when the end of the pin rests either on or immediately adjacent to and touching living or dead plant material that is rooted in the soil.
    d. Record embedded litter (EL) only where removal of the litter would leave an indentation in the soil surface or would disturb the soil surface, breaking the soil crust. Record duff (D) when there is no clear boundary between litter and mineral soil and litter is not removed during typical storms (occurring annually).
    e. Record lichen (LC) only if it is growing on soil, but not if it is attached to rock substrate. If mosses and lichens are recorded to species, write the species code in the "Soil Surface" column.